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SUMMARY

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India

SELECTION AND NEW TECHNIQUES FOR ENGINEERING METHODS AND PROCESSINGS

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D.9.3. SUMMARY OF THE PAPER ENTITLED ' SELECTION AND NEW TECHNIQUES FOR ENGINEERING METHODS AND PROCESSINGS'

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1.(a) In this world of complex economy, the under-developed nations, after realising that they cannot exist without industrial advancement, are marching towards their avowed target with determination and zeal. In this march of progress utilisation of the tool of advanced technology is a must.

1.(b) Nevertheless, the techniques adopted in an underdeveloped country must be based on wise assessment of human reaction, existing condition of income, capital available for investment and the availability of technical skill. Hasty prescriptions may yield negative results. All the same a brief resume of the advance made in recent times by countries which are already industrialised in the basic techniques of engineering, which can be applied with good results in less-developed countries is essential.

2.(a) The foundry process for melting metals and alloys are governed by economy and increase in thermal efficiency of the process apart from obtaining the required temperature. There have been successful attempts also at utilising solar energy for this purpose.

2.(b) Minimising of subsequent machining operation is now the aim of precision casting. The selection of engineering material has also undergone revolutionary changes. Aluminium castings are now occupying the high pedestal which once was occupied by the heavy iron castings. Metal components are giving way to nonmetallic components. Owing to economic considerations the tough forgings are yielding place to versatile castings.

2.(c) Another important field in which considerable development has taken place is material testing - the aircraft industry contributing a great deal towards its advancement.

2.(d) The machining techniques have undergone tremendous change. Special machines and tools have not only helped mass production

xxxxxxx but also cut down the labour to the minimum, without any detrimental effect on either the uniformity or quality of the product. Automatic (mostly electronic) machines have replaced manual inspection in a record number of industries. The latest trend towards standardisation of hundreds of components that go into an assembly has contributed towards easy flow of materials besides cutting down considerably wastage. However highly automised installations are not always suitable for an underdeveloped country where employment problem will be a force to rechon with. Moreover skilled technician to man such machines are seldom readily available. Semi-automats have been found more suitable for such countries.

3. The situation that existed in India before she ventured on a planned development, was more or less similar to any that prevails in the underdeveloped countries, excepting for the fact that she had plenty of natural resources waiting to be harnessed. The basic engineering facilities that had been established in India, before 1950 served the sole purpose of servicing of several plants and equipments of imported origin operating in India. From these early beginnings a wide range of plant and machinery including machine tools have since been undertaken for manufacture. Whereever the results anticipated were in keeping with its planned programme, India has taken advantage of such industrial progress. In the manufacture of small tools the techniques adopted in India are almost akin to those in more advanced countries.

4.(a) All underdeveloped countries on the threshold of industrialisation are facing a common problem - lack of proper personnel to man the huge projects the establishment and operation of which demands a variety of specialisation and technical skill. The answer to this challenging task is of course for the country concerned to plan from the very beginning as a part of its national policy for a widespread establishment of facilities for spread of technical education both at the academic and practical levels. As a shortcut, it is advisible for underdeveloped countries to borrow, at least in the initial stages technical know-how from industrially advanced countries This can be done on either government to government basis or by conclusion of mutually beneficial private technical collaboration arrangements between well established firm in the industrially advanced countries and entrepreneurs in underdeveloped nation. The sooner such dependency by an underdeveloped country for the technical know-how is enabled to seize any aid that would have gone in during this transition period could be considered to have achieved its faith and object.

4.(b) Two outstanding examples of international technical cooperation at the present time in the field are the U.N. expanded programme of technical assistance and the T.C.M. Besides countries which are affluent like U.S.A., U.S.S.R., France and Germany have also been sponsoring technical aid to the underdeveloped nations. The types of industrial projects most likely to receive favourable consideration from these foreign technical assistance authorities are those which are designed to further industrial development in under-developed countries as catalysts, applied selectively at crucial sectors of the national economy.

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